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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,871	07/17/2003	Masahiro Murasato	791_203 NP	2911
25191	7590	08/12/2005		
BURR & BROWN PO BOX 7068 SYRACUSE, NY 13261-7068				EXAMINER DOUGHERTY, THOMAS M
				ART UNIT 2834
				PAPER NUMBER

DATE MAILED: 08/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/622,871	MURASATO ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Thomas M. Dougherty	2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

#### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 27 May 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-4 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 17 July 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | Paper No(s)/Mail Date: _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

**DETAILED ACTION**

***Response to Arguments***

Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection. This is not a final rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeuchi et al. (JP 06-260694) in view of Sakiyama et al. (JP 03-190311). Takeuchi et al. show (fig. A) a piezoelectric/electrostrictive type device (1) comprising: a ceramic substrate (3); and a piezoelectric/electrostrictive operation portion (5) stacked on said substrate (3), said operation portion comprising at least one piezoelectric/electrostrictive layer (5) having an upper exposed surface containing open pores (see applicants' discussion of this reference on pages 3 and 4 of the disclosure at which it is noted that with this type of device, because the piezoelectric/electrostrictive film is very thin, "organic compounds such as a binder are contained in a ceramic material. Therefore, micro-pores having a diameter of 0.5 to 5  $\mu\text{m}$  are formed in the sintered piezoelectric/electrostrictive layer, and some holes are opened in an outer surface of the piezoelectric/electrostrictive layer ... The micro-pores are opened in the outer surface are sometimes formed through the upper electrode formed in the

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piezoelectric/electrostrictive layer upper part") and at least one pair of electrodes electrically connected to said piezoelectric/electrostrictive layer (5).

Takeuchi et al. do not show a chemical structure of at least one of an outer surface of said piezoelectric/electrostrictive layer and an upper electrode of said at least one pair of electrodes defines a highly water repellent surface.

Sakiyama et al. show (figs. 1-3) a piezoelectric/electrostrictive film type device comprising a piezoelectric/electrostrictive operation portion(5) comprising at least one piezoelectric/electrostrictive layer having an upper exposed surface and at least one pair of electrodes (2, 3) electrically connected to said piezoelectric/electrostrictive layer; wherein a chemical structure (9) of at least one of an outer surface of said piezoelectric/electrostrictive layer and an upper electrode of said at least one pair of electrodes (2, 3) defines a highly water repellent surface.

Said highly water repellent surface (9) inhibits moisture infiltration into any pores of said upper exposed surface of said piezoelectric layer.

Said highly water repellent surface inhibits moisture infiltration into any gaps.

Sakiyama et al. do not show a ceramic substrate. They do not specifically cite pores.

It would have been obvious to one having ordinary skill in the art to employ the highly water repellent surface of Sakiyama et al. in the device of Takeuchi et al. in order to reduce the likelihood of leakage current caused by water adhered to a surface, which advantage is noted by Sakiyama et al. in their CONSTITUTION section, and including over the ceramic substrate for the same reason.

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Recitation of the fluorine for the highly water repellent surface would have been obvious to one having ordinary skill in the art since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Brown (US 6,767,587) notes at col. 8, ll. 39-55, the use of a hydrophobic coating containing fluorine and further notes that it is to be used for porous surfaces including a ceramic surface. Ikeda (JP 09-172345) notes designing a piezoelectric device with a specific contact angle range to combat moisture problems.

Direct inquiry to Examiner Dougherty at (571) 272-2022.

*tmd*  
tmd

August 10, 2005

*Thomas M. Dougherty*  
TOM DOUGHERTY  
PRIMARY EXAMINER